An Introduction to the X12 Standards

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Agenda

- Jargon, component building blocks, syntax, semantics
- How to Read the Standards
- Code Sources
- Looping structures
- The HL Segment
- Control Envelopes
- X12 Acknowledgments

Components of the Standard

- Application Control Structure
  - Rules for Use
  - X12.6
- Interchange Control
  - The Electronic Envelope
  - X12.5
- Data Element Dictionary
  - X12.3
- Data Segment Directory
  - X12.22
- Transaction Set Tables
  - Standard for Use by Version

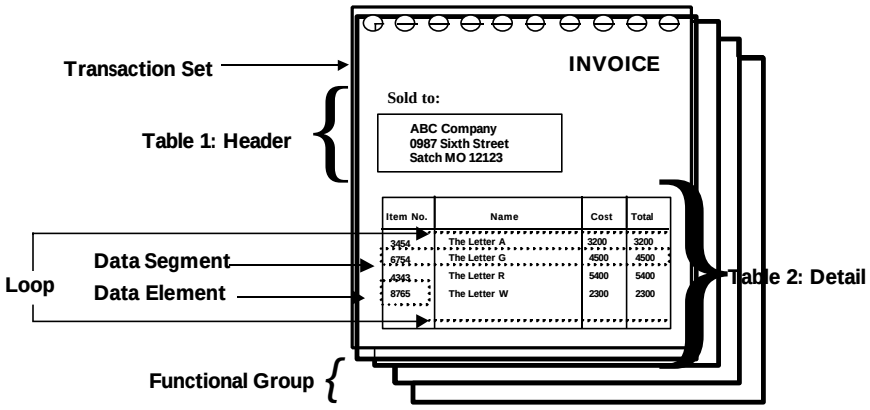
Other Components of the Standards

- X12.58 Security Structures
- X12.59 Implementation of EDI Structures – Semantic Impact
- Design Rules & Guidelines

Data Format vs. Data Transfer

- Data Format
  - EDI Standards, Usage Conventions, Implementation Guidelines
- Data Transfer
  - Communications Protocols, i.e., 2780, 3780, async, TCP/IP, Connect:Direct (NDM) etc.

X12 Terminology



Data Elements

- Smallest unit of information within a data segment
- Must be preceded by a data element separator
- Data element can be
  - Mandatory
  - Optional
  - Conditional
  - Relational

Data Element Types

Type	Symbol	Definition
Numeric	Nn	n = # of implied decimals
Decimal Number	R	Numeric, explicit floating decimal
Identifier	ID	Field containing a code
String	AN	Alphanumeric
Date	DT	YYMMDD (YYYYMMDD in V004010)
Time	TM	HHMMMSS..ss
Binary	B	non-text
Composite		2 or more simple data elements

X12 Data Dictionary

- Reference Number
- Data Element Name
- Type
- Minimum/Maximum Length
- Description
- Code List

X12 Data Element Dictionary Example

7 Bank Account Number

ID number assigned by bank to its client

TYPE= AN MIN= 6 MAX= 17

SEGMENTS USED IN (AS SIMPLE):

C2

TRANSACTION SETS USED IN:

110 210 304 310

X12 Data Element Dictionary Example

1221 Provider Code

Code identifying the type of provider

TYPE= ID MIN= 1 MAX= 3

SEGMENTS USED IN (AS SIMPLE):

PRV

TRANSACTION SETS USED IN:

270 271 275 278 834 837

CODE DEFINITION AND EXPLANATION

H	Hospital
R	Rural Health Clinic
AD	Admitting
AS	Assistant Surgeon
AT	Attending
BI	Billing
BS	Billing Service
	Entity provides a statement of charges of medical goods and services
CO	Consulting
CV	Covering
HH	Home Health Care
LA	Laboratory
ON	On Staff
OP	Operating
OR	Ordering
OT	Other Physician

•Internal Code set/list

•Code definition
•Part of the standard

•Extended code definition
•Not part of the standard

X12 Data Element Dictionary Example

66 Identification Code Qualifier

Code designating the system/method of code structure used for Identification Code (67)

TYPE= ID MIN= 1 MAX= 2

SEGMENTS USED IN (AS SIMPLE):

ACT B11 BIX BR BTI BVA BVB BVP BVS C2
CDS CI CLR CRS CSE DEL E1 ENE ENT ERI
F01 F6X FBB FOS IND LCD LUI N1 NM1 OPS
PCL PR2 PSA PT PWK RT RYL S1 SDQ SES
SPK TD5 TFS TUD VR XPO

CODE DEFINITION AND EXPLANATION

.

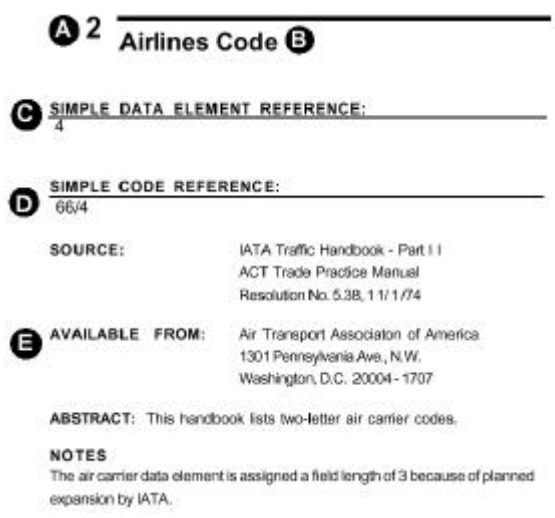
19 FIPS-55 (Named Populated Places)
SEE CODE SOURCE 43
20 Standard Point Location Code (SPLC)
SEE CODE SOURCE 21
21 Health Industry Number (HIN)
SEE CODE SOURCE 121
22 Council of Petroleum Accounting Societies code (COPAS)
SEE CODE SOURCE 61

•External Code set/list pointer

External Code Sources

- What
  - A pointer a list of codes external to the both X12 standards and the HIPAA Implementation Guides
  - Code value (content of data element) to be transmitted determined by external code list administrator, not the X12 standard
- Why
  - Many code lists in use today
    - e.g., zip, SIC, SCAC, ICD-9, etc.
    - Not practical to bring each code into X12 standards
      - Volatile
      - Takes too long to get added
      - Requires use of new X12 version
- Where
  - Appendix C in HIPAA Implementation Guides
  - Code Source Index in X12 Standards

External Code Source Diagram



KEY DIAGRAM LEGEND

A Code Source Identifier
B Code Source Name
C Code Source Reference (on data element)
D Code Source Reference (on data element/code value)
E Code Source Information

External Code Source Example

121 Health Industry Identification Number

SIMPLE CODE REFERENCE:

66/21 128/HI 1270/HI I05/20

SOURCE: Health Industry Number Database

AVAILABLE FROM:

Health Industry Business

Communications Council

5110 North 40th Street

Phoenix, AZ 85018

ABSTRACT: The HIN is a coding system, developed and administered by the Health Industry Business Communications Council, that assigns a unique code number to hospitals and other provider organizations - the customers of health industry manufacturers and distributors.

Composite Data Structure

- An intermediate unit of information in a segment
- Consists of two or more component data elements preceded by a data element separator
- Defined in a composite data structure directory

Composite Data Element

C004 Composite Diagnosis Code Pointer
To identify one or more diagnosis code pointers

TRANSACTION SETS USED IN:
837

SEGMENTS USED IN:
SV1 SV3 SV6

REF	ELE ID NAME		ATTRIBUTES	
01	1328 Diagnosis Code Pointer	M/Z	N0	1/2
02	1328 Diagnosis Code Pointer	O/Z	N0	1/2
03	1328 Diagnosis Code Pointer	O/Z	N0	1/2
04	1328 Diagnosis Code Pointer	O/Z	N0	1/2

SEMANTIC NOTES
01 C004-01 identifies the primary diagnosis code for this service line.
02 C004-02 identifies the second diagnosis code for this service line.
03 C004-03 identifies the third diagnosis code for this service line.
04 C004-04 identifies the fourth diagnosis code for this service line.

Absence of Data in a Composite

- Any component data element that is indicated as mandatory must be included in the composite data structure
- Optional component data elements may be omitted if they are not needed
- The absence of optional omitted component data elements noted by the occurrence of the component element separators

Data Segment

- An intermediate unit of information in a transaction set
- Consists of
  - segment identifier
  - one or more composite data structures
  - one or more simple data elements
- Each preceded by a data element separator
- Ends with a segment terminator
- Trailing data element separators must be suppressed
- Segments defined in a data segment directory

Element Condition Designator in a Segment

(Relational Condition)

- (M) Mandatory
  - The designated simple data element or composite data structure must be present in the segment
  - Presence means a data element, composite data structure, or component data element shall not be empty
- (O) Optional
  - The presence of a value for a simple data element or the presence of a value for any of the component data elements of a composite data structure is at the option of the sender
- (P) Paired or Multiple
  - If any <subj_elem> specified in the <relational_cond> is present, then all of the <subj_elem> specified must be present

Element Condition Designator in a Segment

(Relational Condition)

- (R) Required
  - At least one of the <subj_elem> specified in the <relational_cond> must be present
- (E) Exclusion
  - Not more than one of the <subj_elem> specified in the <relational_cond> may be present
- (C) Conditional
  - If the first <subj_elem> specified in the <relational_cond> is present, then all other <subj_elem> must be present
- (L) List Conditional
  - If the first <subj_elem> specified in the <relational_cond> is present, then at least one of the remaining <subj_elem> must be present

Absence of Data in a Segment

- Absence of data is represented by the value <empty>
  - any other value indicates that data are present
- Optional data elements & preceding separators at end of a segment omitted if not needed
- Optional data elements before end of a segment indicated by element separator

Syntax Notes

- Describe relational conditions among two or more data elements within the same segment
- Describe relational conditions among two or more component data elements within the same composite data structure

Semantic Notes

- A semantic note provides additional information about the intended use of a standard
  - not part of the formal syntax
  - must be followed in order to be in compliance with the standard
- Are considered to be part of the relevant standard
  - are designated to distinguish them from
    - syntax notes (which are part of the standard)
    - comments (which are not part of the standard)

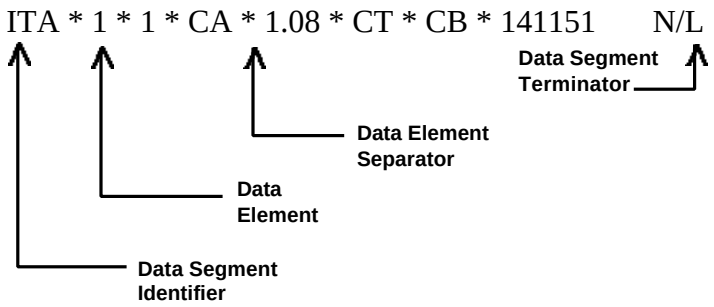
Semantic Notes

- Semantic notes for transaction sets
  - provide information with respect to the intended use of a segment within the context of a particular transaction set
  - provide information regarding the intended meaning of a designated data element
  - may also define relational conditions among data elements in a segment based on the presence of a specific value (or one of a set of values) in one of the data elements

Segment Comment

- Provides additional information regarding the intended use of the segment

Structure of an X12 Data Segment



Binary Segment

- A Binary segment has the same structure as a data segment
  - Used for transferring binary data
  - Has a length parameter
  - Length of the binary data element is provided in the preceding data element so that the end of the binary data can be located
- A Binary segment may not occur outside the boundaries of a transaction set

X12 Segment Directory

- Segment Identifier
- Segment Name
- Purpose
- Data Elements
- Mandatory, Optional, Conditional
- Transaction Sets Where Used

X12 Segment Directory Example

BGN Beginning Segment
To indicate the beginning of a transaction set

TRANSACTION SETS USED IN:
100 101 105 106 107 108 112 124 130 131
135 138 139 140 141 142 143 144 146 147
148 149 150 152 154 155 157 159 175 176
180 185 186 189 190 191 194 195 197 198
199 200 201 202 203 205 206 242 244 249
250 251 252 255 260 261 262 263 264 265
266 267 268 272 273 275 280 285 286 288
362 432 433 470 475 500 501 503 504 521
540 561 568 620 625 650 715 814 822 824
831 833 834 853 871 872 877 881 887 888
891

REF	ELE ID NAME		ATTRIBUTES	
01	353 Transaction Set Purpose Code	M	ID	2/2
02	127 Reference Identification	M/Z	AN	1/30
03	373 Date	M/Z	DT	8/8
04	337 Time	X/Z	TM	4/8
05	623 Time Code	O/Z	ID	2/2
06	127 Reference Identification	O/Z	AN	1/30
07	640 Transaction Type Code	O	ID	2/2
08	306 Action Code	O	ID	1/2
09	786 Security Level Code	O	ID	2/2

Deletes data element from position 10.	4	114196

SYNTAX NOTES
02 BGN02 is the transaction set reference number.
05 C0504 - If BGN05 is present, then BGN04 is required.

SEMANTIC NOTES
03 BGN03 is the transaction set date.
04 BGN04 is the transaction set time.
05 BGN05 is the transaction set time qualifier.
06 BGN06 is the transaction set reference number of a previously sent transaction affected by the current transaction.

Deletes semantic note from position 10.	4	114196

Transaction Set

- A semantically meaningful unit of information exchanged between trading partners
  - A set of EDI records that make up a business document (e.g., Claim Submission)
- Composed of Header, Line & Summary segments in a specified order
- Separated from other transaction sets by control segments
  - Transaction Header (ST)
  - Transaction Trailer (SE)

Transaction Set

- May optionally include
  - one or more transaction security header segments
  - one or more transaction assurance header segments
  - one or more loop control segments
  - one transaction security value segment for each assurance header present
  - one transaction security trailer segment for each security header segment present

Data Segments in a Transaction Set

- Requirements for segments & control segments used to form a transaction set
  - a requirement designator
  - a position in the transaction set definition
  - a maximum occurrence
- Data Segment Requirement Designator
  - (M) Mandatory
  - (O) Optional

Repeated Occurrences of Single Data Segments

- A segment can be repeated in a transaction set
  - Must have a specified maximum number of occurrences defined at each specified position
- A segment may also repeat an unlimited number of times
  - Notation ">1“
  - ">1" used only when specific maximum number of occurrences cannot be determined or is unknown
- By definition a data segment repeat consists of at least two occurrences
  - In the actual data stream it may appear fewer than two times

Data Segment Groups

- Data segments in a transaction set may be repeated as
  - individual data segments
  - unbounded or bounded loops

Loops of Data Segments

- Loops are groups of two or more semantically related segments
- Data segment loops may be unbounded or bounded

Unbounded Loops

- The first data segment in the loop establishes the loop start
- Can appear once and only once in each occurrence of the loop
- Cannot appear elsewhere in the loop
- Loops may have a specified maximum number of occurrences
- Loops may also have unlimited number of occurrences
  - notation for an unlimited number of repeats is ">1“
- Is a specified sequence of segments in the loop

Unbounded Loops

- Loops are optional or mandatory
- First segment in the loop requirement designator indicates if loop is mandatory or option
- Each appearance of the beginning segment defines an occurrence of the loop
- Requirement designator for any segment within the loop following beginning segment applies for each occurrence of the loop
- A mandatory requirement designator for any data segment within the loop makes segment mandatory for each occurrence of the loop

Bounded Loops

- Characteristics of unbounded loops also apply to bounded loops
  - bounded loops have no restriction with respect to the beginning segment ID
- Bounded loops require a
  - loop start (LS) segment
  - loop end (LE) segment
- LS and LE segments suppressed if the loop not used
- Requirement designator on the LS and LE segments must match the requirement designator of the beginning segment of the loop
- A bounded loop may contain only one loop structure (a single definition of the included segments) at the level bracketed by the LS and LE segments
  - Subordinate loops permissible

Loop Control Segments

- Used only to delineate bounded loops
- Loop delineation consist only of
  - loop header (LS segment)
  - loop trailer (LE segment)
- LS defines the start of a structure that must contain one or more iterations of a loop of data segments
  - provides the loop identifier for this loop
  - appears only before the first occurrence of the loop
- LE defines the end of the structure
  - appears only after the last occurrence of the loop

Loop Control Segments

LS Loop Header
To indicate that the next segment begins a Loop

CONTROL SEGMENT

TRANSACTION SETS USED IN:
124 175 185 186 200 201 217 218 255 264
265 271 272 285 404 417 418 421 501 503
838 841 846 850 854 860 894 895 940 945

REF	ELE ID NAME		ATTRIBUTES	
01	447 Loop Identifier Code **	M	AN	1/6

One loop may be nested contained within another loop, provided the inner nested loop terminates before the outer loop. When specified by the standard setting body as mandatory, this segment in combination with "LE", must be used. It is not to be used if not specifically set forth for use. The loop identifier in the loop header and trailer must be identical. The value for the identifier is the loop ID of the required loop segment. The loop ID number is given on the transaction set diagram in the appropriate ASC X12 version/release.

** DE447 Definition:

The loop ID number given on the transaction set diagram is the value for this data element in segments LS and LE

SEMANTIC NOTES
00 See Figures Appendix for an explanation of the use of the LS and LE segments.

COMMENTS
00 See Figures Appendix for an explanation of the use of the LS and LE segments.

LS - Loop Header

LS - Loop Header

Following is a figure detailing the use of the LS and LE segments in conjunction.

LS is a control segment. LS is always used in conjunction with a corresponding loop trailer (end) - LE, as illustrated below. The LS and LE indicate the start and end of a loop but are not part of the iteration of the loop.

LOOP NESTING
Loop "A" Header (LS "A")
    Loop "B" Header (LS "B")
        Loop "C" Header (LS "C")
        Loop "C" Trailer (LE "C")
        Loop "D" Header (LS "D")
        Loop "D" Trailer (LE "D")
    Loop "B" Trailer (LE "B")
Loop "A" Trailer (LE "A")

Neither LS nor LE is used if the data within the loop is not used.

The HL Segment

What it's used for

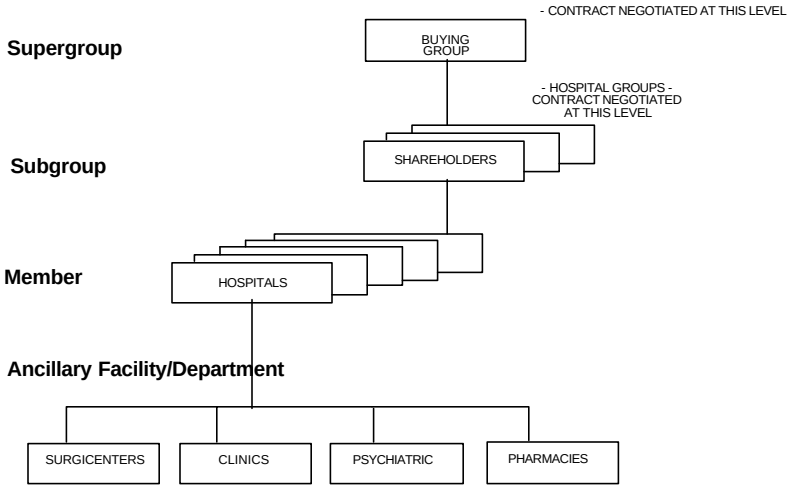
How its used

HL Purpose

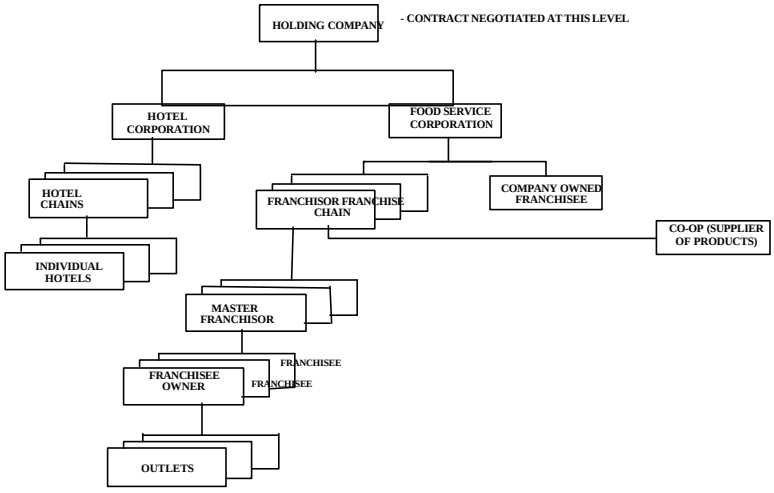
- Identifies levels of information using a hierarchical structure
  - Shipments, organizations, semantically related groups of information within a transaction
- Provides a context for each level
- Defines top/down and left/right ordered structures or hierarchy
- Identifies parent/child relationship

Advance Ship Notice for a Shipment

Healthcare Group Purchasing Organization



Retail Industry Organization



HL Hierarchical Level

HL Hierarchical Level

To identify dependencies among and the content of hierarchically related groups of data segments

TRANSACTION SETS USED IN:

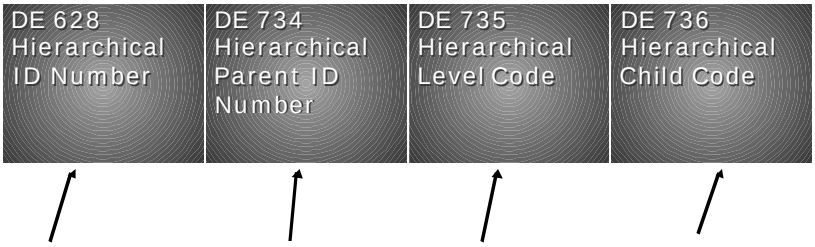
105 112 148 155 157 186 194 196 242 248
267 270 271 276 277 278 286 500 536 561
625 650 805 811 816 837 841 842 847 856
857 858 869 870

REF	ELE ID	NAME		ATTRIBUTES	
01	628	Hierarchical ID Number	M	AN	1/12
02	734	Hierarchical Parent ID Number	O	AN	1/12
03	735	Hierarchical Level Code	M	ID	1/2
04	736	Hierarchical Child Code	O	ID	1/1

COMMENTS

00 The HL segment is used to identify levels of detail information using a hierarchical structure, such as relating Line-item data to shipment data, and packaging data to line-item data.
00 The HL segment defines a top- down/left-right ordered structure.
01 HL01 shall contain a unique alphanumeric number for each occurrence of the HL segment in the transaction set.
For example, HL01 could be used to indicate the number of occurrences of the HL segment, in which case the value of HL01 would be "1" for the initial HL segment and would be incremented by one in each subsequent HL segment within the transaction.
02 HL02 identifies the hierarchical ID number of the HL segment to which the current HL segment is subordinate
03 HL03 indicates the context of the series of segments following the current HL segment up to the next occurrence of an HL segment in the transaction. For example, HL03 is used to indicate that subsequent segments in the HL loop form a logical grouping of data referring to shipment, order, or item-level information.
04 HL04 indicates whether or not there are subordinate (or child) HL segments related to the current HL segment.

How the HL Works



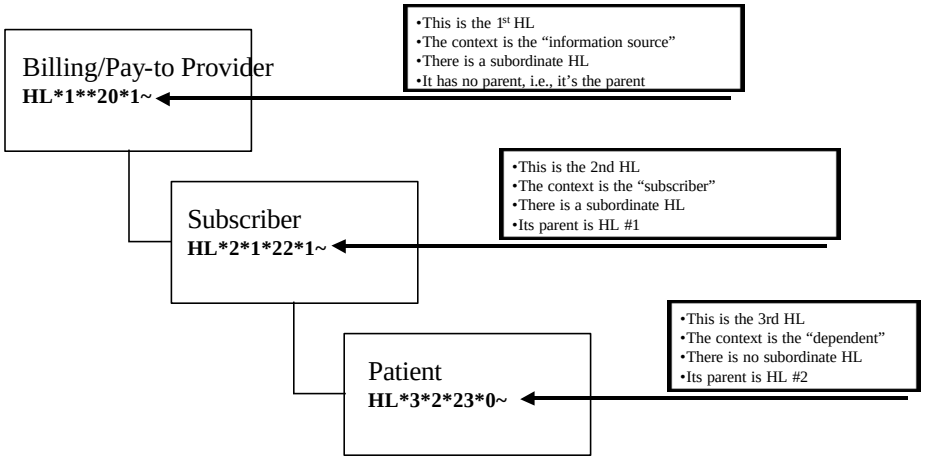
An alphanumeric number uniquely identifying each HL segment in a transaction

Contains the HL segment number of the parent to this HL, i.e. this segment is subordinate to its parent

A code specifying the context for this series of HL segments up to the next occurrence of an HL, e.g., item level or order level

A code specifying if there is a subordinate HL segment to this HL, i.e., a child HL segment follows which is related to this HL

Semantically Grouped Information
(Health Care Claim)



X12 Transaction Example

- Transaction set #, name, purpose & scope

834 **Benefit Enrollment and Maintenance**

Functional Group ID: BE

This Draft Standard for Trial Use contains the format and establishes the data contents of the Benefit Enrollment and Maintenance Transaction Set (834) for use within the context of an Electronic Data Interchange (EDI) environment. This transaction set can be used to establish communication between the sponsor of the insurance product and the payer. Such transaction(s) may or may not take place through a third party administrator (TPA).
For the purpose of this standard, the sponsor is the party or entity that ultimately pays for the coverage, benefit or product. A sponsor can be an employer, union, government agency, association, or insurance agency.

The payer refers to an entity that pays claims, administers the insurance product or benefit, or both. A payer can be an insurance company, health maintenance organization (HMO), preferred provider organization (PPO), government agency (Medicare, Medicaid, Champus, etc.), or an entity that may be contracted by one of these former groups.

For the purpose of the 834 transaction set, a third party administrator (TPA) can be contracted by a sponsor to handle data gathering from those covered by the sponsor if the sponsor does not elect to perform this function itself.

X12 Transaction Example: Standard

- Transaction set table(s) of segments: Table 1

Table 1 - Header

POS. #	SEG. ID	NAME	REQ. DES.	MAX USE	LOOP REPEAT
010	ST	Transaction Set Header	M	1	
020	BHT	Beginning of Hierarchical Transaction	M	1	

X12 Transaction Example: Standard

- Transaction set table(s) of segments: Table 2

Table 2 - Detail

POS. #	SEG. ID	NAME	REQ. DES.	MAX USE	LOOP REPEAT
		LOOP ID - 2000			>1
010	HL	Hierarchical Level	M	1	
020	TRN	Trace	O	9	
		LOOP ID - 2100			>1
030	NM1	Individual or Organizational Name	M	1	
040	REF	Reference Identification	O	9	
050	N2	Additional Name Information	O	1	
060	N3	Address Information	O	1	
070	N4	Geographic Location	O	1	
080	PER	Administrative Communications Contact	O	3	
090	PRV	Provider Information	O	1	
100	DMG	Demographic Information	O	1	
110	INS	Insured Benefit	O	1	
120	DTP	Date or Time or Period	O	9	
		LOOP ID - 2110			99
130	EQ	Eligibility or Benefit Inquiry	O	1	
135	AMT	Monetary Amount	O	2	
140	VEH	Vehicle Information	O	1	
150	PDR	Property Description - Real	O	1	
160	PDP	Property Description - Personal	O	1	
170	III	Information	O	10	
190	REF	Reference Identification	O	1	
200	DTP	Date or Time or Period	O	9	
210	SE	Transaction Set Trailer	M	1	

X12 Transaction Example: Standard

- Transaction set table(s) of segments: Transaction Set Notes

NOTES:

1/050 The AMT segment is used to record the total Flexible Spending Account contributions in the transaction set.

1/060 The QTY segment is used to record the total number of subscribers and dependents in the transaction set.

1/070 At least one iteration of the N1 loop is required to identify the sender or receiver.

2/010 A Subscriber is a person who elects the benefits and is affiliated with the employer or the insurer. A Dependent is a person who is affiliated with the subscriber, such as a spouse, child, etc., and is therefore entitled to benefits. Subscriber information must come before dependent information. The INS segment is used to note if information being submitted is subscriber information or dependent information.

2/020 The REF segment is required to link the dependent(s) to the subscriber.

2/200 The DSB loop may only appear for the Subscriber.

2/310 The LX loop contains information about the primary care providers for the subscriber or the dependent, and about the beneficiaries of any employer-sponsored life insurance for the subscriber.

2/320 Either NM1 or N1 will be included depending on whether an individual or organization is being specified.

2/550 The HSA loop may only appear for the Subscriber.

EDI Controls & Enveloping Structures

- Control Segments
  - Interchange
  - Functional Group
  - Transaction Set Header & Trailer
  - Loop Control
- Control Data Elements
  - Sender/Receiver Ids
    - Interchange
    - Functional Group
- Control Numbers
- Version ID

EDI Controls

- Acknowledgments
  - Functional Acknowledgment
  - Interchange Acknowledgment
- Delimiters & Separators
  - Data element
  - Component element
  - Repeating data element
  - Segment terminator

Transaction Set Control Segments

- ST segment indicates start of a transaction set
  - Identifies the transaction set
- SE segment indicates end of a transaction set trailer
  - provides a count of the data segments
  - Count includes the ST and SE segments

ST Transaction Set Header

To indicate the start of a transaction set and to assign a control number

CONTROL SEGMENT

TRANSACTION SETS USED IN:

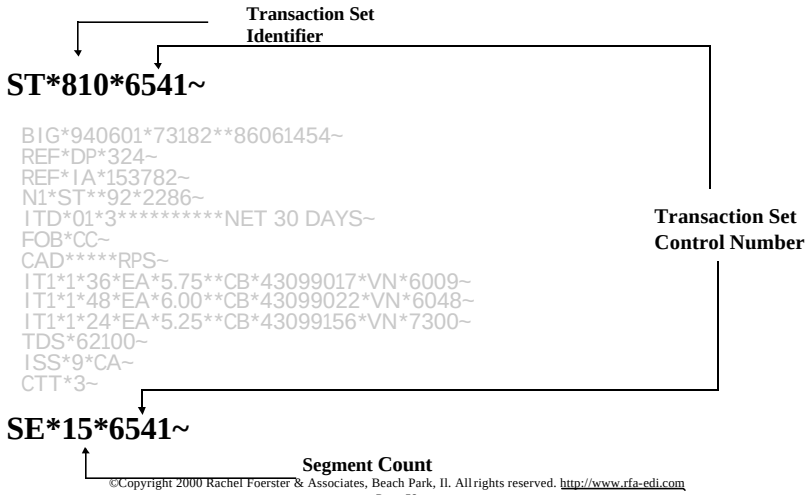
All

REF	ELE ID	NAME	ATTRIBUTES		
01	143	Transaction Set Identifier Code	M/Z	ID	3/3
02	329	Transaction Set Control Number	M	AN	4/9

SEMANTIC NOTES

01 The transaction set identifier (ST01) used by the translation routines of the interchange partners to select the appropriate transaction set definition (e.g., 810 selects the Invoice Transaction Set).

Transaction Set Structure



Functional Group

- Consists of
  - a functional group header segment
  - a functional group trailer segment
  - optionally
    - one or more functional security header segments
    - one or more functional assurance header segments
    - one functional security value segment for each assurance header present
    - one functional security trailer segment for each security header segment present
  - one or similar transaction sets
- The functional identifier defines the collection of transaction sets that may be included within the functional group

Functional Group Control Segments

- The GS header segment
  - starts and identifies one or more related transaction sets
  - provides a control number
  - Provides application identification information
- The GE trailer segment
  - defines the end of the functional group of related transaction sets
  - provides a count of contained transaction sets

GS Functional Group Header

To indicate the beginning of a functional group and to provide control information

CONTROL SEGMENT

TRANSACTION SETS USED IN:

None

REF	ELE ID NAME	ATTRIBUTES		
01	479 Functional Identifier Code	M	ID	2/2
02	142 Application Sender's Code	M	AN	2/15
03	124 Application Receiver's Code	M	AN	2/15
04	373 Date	M/Z	DT	8/8
05	337 Time	M/Z	TM	4/8
06	28 Group Control Number	M/Z	N0	1/9
07	455 Responsible Agency Code	M	ID	1/2
08	480 Version / Release / Industry Identifier Code	M	AN	1/12

SEMANTIC NOTES

04 GS04 is the group date.

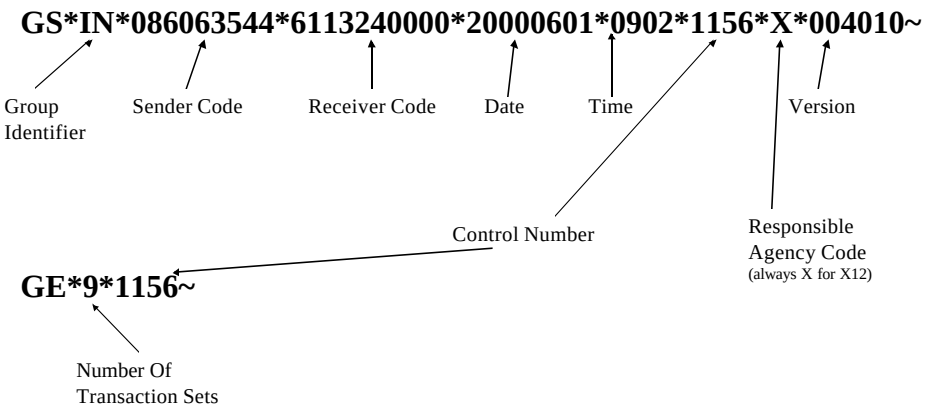
05 GS05 is the group time.

06 GS06 The data interchange control number in this header must be identical to the same data element in the associated functional group trailer, GE02.

COMMENTS

00 A functional group of related transaction sets, within the scope of X12 standards, consists of a collection of similar transaction sets enclosed by a functional group header and a functional group trailer.

Functional Group GS/GE



Interchange

- A collection of documents in the same electronic envelope
- May be of the same or different type
  - Benefit enrollment, claim
- All must be destined to a single receiver (Trading Partner)
- Must start with an Interchange Header (ISA) and end with an Interchange Trailer (IEA)

ISA Interchange Control Header

To start and identify an interchange of zero or more functional groups and interchange-related control segments

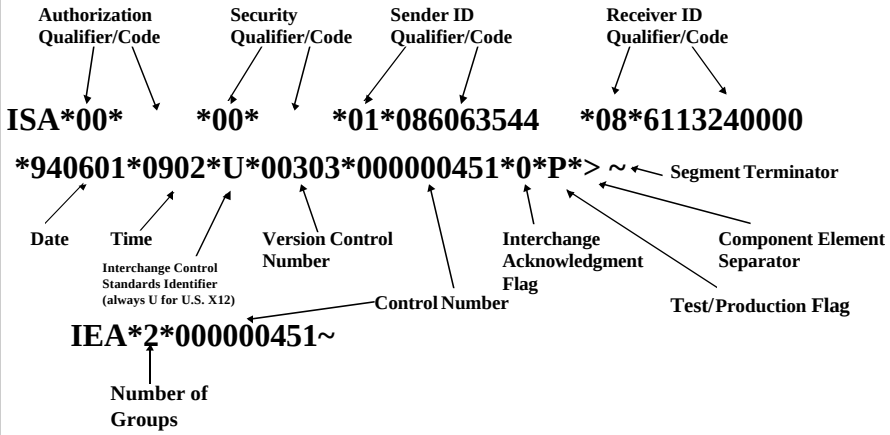
CONTROL SEGMENT

TRANSACTION SETS USED IN:

None

REF	ELE ID	NAME	ATTRIBUTES		
01	I01	Authorization Information Qualifier	M	ID	2/2
02	I02	Authorization Information	M	AN	10/10
03	I03	Security Information Qualifier	M	ID	2/2
04	I04	Security Information	M	AN	10/10
05	I05	Interchange ID Qualifier	M	ID	2/2
06	I06	Interchange Sender ID	M	AN	15/15
07	I05	Interchange ID Qualifier	M	ID	2/2
08	I07	Interchange Receiver	M	ID	15/15
09	I08	Interchange Date	M	DT	6/6
10	I09	Interchange Time	M	TM	4/4
11	I10	Interchange Control Standards Identifier	M	ID	1/1
12	I11	Interchange Control Version Number	M	ID	5/5
13	I12	Interchange Control Number	M	N0	9/9
14	I13	Acknowledgment Requested	M	ID	1/1
15	I14	Usage Indicator	M	ID	1/1
16	I15	Component Element Separator	M		1/1

Interchange Control Segments ISA/IEA



Relations Among Control Segments

- Control segments have a nested relationship

ISA Interchange Header, starts a group of one or more Functional Groups.
GS Functional Group Header, starts a group of related transaction sets.
ST Transaction Set Header, starts a transaction set.
LS Loop Header, starts a bounded loop of data segments but is not part of the loop.
LS Loop Header, starts an inner, nested, bounded loop.
LE Loop Trailer, ends an inner, nested, bounded loop.
LE Loop Trailer, ends a bounded loop of data segments but is not part of the loop.
SE Transaction Set Trailer, ends a transaction set.
GE Functional Group Trailer, ends a group of related transaction sets.
IEA Interchange Trailer, end an Interchange of one or more Functional Groups.

Relationship of ISA & GS Segments

- ISA control version number
  - identifies syntax, segments, and data elements used to specify the control structures defined in X12.5
    - i.e., all segments outside the GS/GE envelope
- GS version and release numbers
  - Identify the syntax, transaction sets, segments, and data elements that are used within and inclusive of the GS/GE envelope
- Interchange control version number in the ISA completely independent of the version and release numbers in the GS

EDI Interchange
Sample Transmission

```
ISA*00*       *00*       *08*6112520000    *08*6114590000    *940505*0050*U*00303*101000051*0*P*>~
GS*PO*6112520000*6114590003*940505*0050*201000006*X*003020~
ST*850*301000013~
BEG*00*SA*09735600**940505~
NTE**GOODS SHIPPED PER EDI INSTRUCTIONS~
NTE**WHOLESALE CONTRACT/LISTINGS TERMS~
REF*DP*033~
REF*IA*053455~
CSH*P2~
DTM*010*940505~
DTM*001*940610~
TD5*****1 - 200 LBS PEPS-RIDGF~
TD5*****201 + TNT RED STAR EXPRESS~
N1*SF**92*00~
N1*BY**92*08995~
N1*ST**92*08995~
PO1**36*EA*18.50**CB*71006543~
PID*F*08***WINDSUITS~
PID*F*75***BLUE~
PID*F*91***2T - 4T~
CTT*1~
SE*20*301000013~
GE*1*201000062~
IEA*1*101000051~
```


Example of EDI Data Stream

```
ISA^00^bbbbbbbbbb^00^bbbbbbbbbb^01^
0123456789bbbbb^01^1234567890bbbbb^930716
^1031^U^00200^123400000^0^P^|~GS^IN^
222222^333333^930716^1030^1234^X^003030^~
ST^810^0001~BIG^900713^1001^900625^
P989320~N1^BT^^21^43MW32J00~ITD^01^3
^2^^10~IT1^10^3^CA^12.755^^VC^D1906~CTT
^1~SE^6^0001~GE^1^1234~IEA^1^123400000~
```

X12 Acknowledgments

- TA1
  - Purpose:
    - To report the status of the processing of an interchange header and trailer by the address receiver
- 997 Functional Acknowledgment Transaction Set

Functional Acknowledgment The Key Control Transaction

- Purpose:
  - Acknowledge receipt of an interchange
  - Acknowledge a functional group
  - Accept/reject one or more functional groups
  - Accept/reject one or more transactions
  - Verify and report compliance with the standard

DOES NOT CONFIRM APPLICATION PROCESSING

997 Functional Acknowledgment

FA FUNCTIONAL GROUP=

This Draft Standard for Trial Use contains the format and establishes the data contents of the Functional Acknowledgment Transaction Set (997) for use within the context of an Electronic Data Interchange (EDI) environment. The transaction set can be used to define the control structures for a set of acknowledgments to indicate the results of the syntactical analysis of the electronically encoded documents. The encoded documents are the transaction sets, which are grouped in functional groups, used in defining transactions for business data interchange. This standard does not cover the semantic meaning of the information encoded in the transaction sets.

Table 1

NOTE	POS.NO.	SEG.ID	NAME	REQ.DES.	MAX USE	LOOP REPEAT	
N	010	ST	Transaction Set Header	M	1		
N	020	AK1	Functional Group Response Header	M	1		
		LOOP ID - AK2					999999
N	030	AK2	Transaction Set Response Header	O	1		
		LOOP ID - AK3				999999	
C	040	AK3	Data Segment Note	O	1		
	050	AK4	Data Element Note	O	99		
	060	AK5	Transaction Set Response Trailer	M	1		
	070	AK9	Functional Group Response Trailer	M	1		
	080	SE	Transaction Set Trailer	M	1		

997 Functional Acknowledgment

NOTES

1/010 These acknowledgments shall not be acknowledged, thereby preventing an endless cycle of acknowledgments of acknowledgments . Nor shall a Functional Acknowledgment be sent to report errors in a previous Functional Acknowledgment.

1/010 The Functional Group Header Segment (GS) is used to start the envelope for the Functional Acknowledgment Transaction Sets. In preparing the functional group of acknowledgments, the application sender's code and the application receiver's code, taken from the functional group being acknowledged, are exchanged; therefore, one acknowledgment functional group responds to only those functional groups from one application receiver's code to one application sender's code.

1/010 There is only one Functional Acknowledgment Transaction Set per acknowledged functional group.

1/020 AK1 is used to respond to the functional group header and to start the acknowledgement for a functional group. There shal l be one AK1 segment for the functional group that is being acknowledged.

1/030 AK2 is used to start the acknowledgement of a transaction set within the received functional group. The AK2 segments shall appear in the same order as the transaction sets in the functional group that has been received and is being acknowledged.

COMMENTS

1/040 The data segments of this standard are used to report the results of the syntactical analysis of the functional groups of transaction sets; they report the extent to which the syntax com plies with the standards for transaction sets and functional gro ups. They do not report on the semantic meaning of the transaction sets (for example, on the ability of the receiver to comply w ith the request of the sender).

Changes note at table/position 1/010.	6	446297